METHOD AND SYSTEM FOR THE MANAGEMENT OF SUBSCRIBER FUNCTIONS

FIELD OF THE INVENTION

5   The present invention relates to telecommunication. In particular, the invention relates to a new and advanced method and system for the management of subscriber functions.

BACKGROUND OF THE INVENTION

10   At present, for each subscriber in a telephone exchange, there are about 130 subscriber functions. Most (about 80%) of these functions are of a nature that that does not allow any changes to be made
15 in them by the subscriber him/herself via his/her telephone. Generally, these functions are also operator-specific rather than subscriber-specific. In practice, for about 90% of the subscribers in the exchange, these functions are the same.
20   For each subscriber, an individual subscriber record of a length under one hundred bytes for has been reserved the storage of subscriber functions. When a subscription is created, certain default functions are created for it, and these can be defined
25 specifically for the operator and for the exchange in conjunction with the delivery of the exchange and later using MML (Man Machine Language, MML) commands. However, once the subscription has been created, there is no information available as to whether the func-
30 tions included in the default set of functions are still valid for the subscriber or whether they have been changed.

   A problem with the present arrangement is the slowness of any operations pertaining to subscriber
35 functions. For instance, if all subscribers in an exchange are to be given the right to call transfer,

then it will be necessary to use MML commands applying to the functions defined for each subscriber. As there are hundreds of thousands of subscribers, this process may take several weeks.

5   On the other hand, if subscribers are to be transferred from one exchange to another, then it will be necessary to first read all the subscribers in the old exchange, in other words, a MML command is issued that will print out the functions defined for each

10   subscriber. After that, the functions for each subscriber are read one by one. In this way, the data for hundreds of subscribers at a time are transferred to a computer, whereupon they are created again in the other exchange using MML commands via the computer in

15   question. These operations are repeated in batches of a few hundred subscribers until all the subscribers have been transferred. Although the transfer is carried out by computer, it has to be done at a quiet time at night, so the time available for this is about

20   five hours a day. In addition, since the data in question is in ASCII form (American Standard Code for Information Interchange, ASCII) and has to be processed character by character, the process for each subscriber takes as long as 20-30 seconds. For example,

25   to complete the transfer of a hundred thousand subscribers in practice takes several weeks.

        The object of the present invention is to disclose a new type of method that will eliminate the drawbacks described above. A specific object of the

30   present invention is to disclose a method and system for the optimisation of subscriber functions and their management.

BRIEF DESCRIPTION OF THE INVENTION

35   The method of the invention for the management of subscriber functions is used to manage the subscriber functions for subscribers in a digital

telephone exchange. The subscriber functions are stored in records. Subscriber functions include e.g. call transfer, call waiting and conference between three parties. Some of the functions are default func-

5   tions, and these make up a default function set. One or more default function sets are provided, depending on the need. The functions comprised in the default function sets may already have been defined specifically for the operator and/or exchange at the time

10   when the exchange was delivered to the operator.

According to the invention, subscriber functions consistent with default function sets are stored in default records common to the subscribers, the subscriber functions consistent with each default func-

15   tion set being stored in a separate default record. Further, according to the invention, the subscriber functions for each default subscriber are read when needed from the default record containing the default function set that defines the subscriber functions for

20   the default subscriber in question. Default subscriber refers to a subscriber having subscriber functions corresponding to one of the default function sets. When a default function set is modified, the subscriber functions for the default subscribers con-

25   cerned are changed accordingly. Further, according to the invention, the subscriber functions for special subscribers are stored in a subscriber-specific record for each subscriber. Special subscriber refers to a subscriber for whom the subscriber functions are dif-

30   ferent from the default definitions. Further, according to the invention, the subscriber functions for special subscribers are read when needed from the subscriber-specific records stored for the subscribers in question.

35   As compared with prior art, the present invention has the advantage that it significantly accelerates operations concerning subscriber functions. At

present, changes applying to subscriber functions have to be made separately for each subscriber, whereas in the solution of the invention about 90 % of the subscribers can be dealt with by applying the changes to

5   default records only, while subscriber-specific modifications only need to be made for the remaining 10 % of the subscribers. For instance, the operations needed to extend and activate new functions e.g. for the subscribers in an exchange or home location regis-

10 ter can be carried out hundreds of times faster than before. A transfer of subscribers from one exchange to another can be accomplished at least ten times faster because about 90 % of the subscribers can be transferred by reading all default function subscribers

15 from the old exchange and a mere subscriber creation command in the new exchange is sufficient to make the default functions visible for them. Only for the remaining 10 % of the subscribers is it necessary to read and create the functions separately for each sub-

20 scriber. Therefore, instead of taking weeks, the transfer is accomplished in a matter of days. A further advantage of the invention is an economy in storage space because the size of the subscriber database can be reduced to about a tenth. Moreover, queries re-

25 garding functions can be performed faster as the default functions can be read from one and the same place.

In an embodiment of the invention, data indicating whether the subscriber is a default subscriber

30 or a special subscriber is provided in conjunction with the subscriber number of each subscriber.

In an embodiment of the invention, when the subscriber functions for a special subscriber are modified, the modified functions are checked to estab-

35 lish whether they correspond to any one of the default function sets. If they do, the special subscriber is again treated as a default subscriber.

In an embodiment of the invention, the sub-
scriber functions for a special subscriber are not
placed in a subscriber-specific record until one of
the functions in question is activated for use for the
5 first time.

In an embodiment of the invention, the de-
fault definitions are subscriber type-specific. Sub-
scriber types include e.g. analogue subscriber, ISDN
subscriber, RCSC subscriber (subscriber with alarm
10 function with computation) and RCSN subscriber (sub-
scriber with alarm function without computation). In
other words, the default function sets are determined
according to an assumed user profile.

15 **BRIEF DESCRIPTION OF THE DRAWINGS**

In the following, the invention will be de-
scribed by the aid of a few examples of its embodi-
ments with reference to the attached drawing, wherein
a diagram illustrates a system according to the inven-
20 tion.

DETAILED DESCRIPTION OF THE INVENTION

The drawing presents an embodiment of the
system of the invention. The system comprises a GSM
25 network 1, default records 2^{00} and 2^{01} and a number of
special records 2^1, 2^2 and 2^3. The default function
sets are defined specifically for each operator and/or
exchange. In practice, the functions for about 90 % of
the subscribers will not be changed at all from the
30 default definitions. Operations concerning subscriber
functions are thus significantly accelerated because,
according to the invention, the default functions are
stored in the default records 2^{00} and 2^{01} and the sub-
scriber number is only provided with data indicating
35 whether the subscriber is a default subscriber or not.
In the case of a default subscriber (in about 90 % of

all cases), the functions are read from the default record in question.

In practice, the circumstance whether the subscriber is a default subscriber can be expressed
5   e.g. by using the same subscriber information index terminating the analysis. If the functions for the subscriber are changed, i.e. the subscriber becomes a special subscriber, then e.g. the default function bit is reset to zero (in other words, the subscriber is
10 given a specific subscriber information index) and a subscriber-specific record 2^1 is allocated for the subscriber, from which record the functions for that subscriber are subsequently read. When the functions for a special subscriber are changed, a check is carried
15 out to establish whether the functions after the change correspond to one of the default function sets. If this is the case, then the subscriber is redefined as a default subscriber. On the other hand, if a default function set is modified, then the changes will
20 apply to all the default subscribers concerned. For example, if the operator wishes to give all subscribers connected to an exchange the right to call transfer, then, according to the invention, an MML command applying to the default functions is all that is
25 needed, whereas at present it is necessary to issue commands applying to the functions for each subscriber. In addition, according to the invention, it is possible that a subscriber-specific record is only allocated when the function in question is activated
30 for the first time. For instance, in the case of call transfer, a subscriber-specific record is only allocated when the subscriber activates the call transfer function for the first time and therefore needs space for a C-number, and not directly when the subscriber
35 is given permission to make use of the call transfer function.

Moreover, according to the invention, the default functions can be defined specifically for each subscriber type. For example, separate default function sets are provided for each subscriber type speci-

5   fied in subscriber function MML, such as e.g. analogue subscriber, ISDN subscriber, FM subscriber (subscriber for remote-controlled call transfer), FMRB subscriber (subscriber for telephone number check via telephone set) and AD&C subscriber (call duration and charge in-

10   dication). In other words, the default function sets are defined according to an assumed user profile. Even if it should be necessary to use dozens of different default function sets, it would still be considerably less than in the current system where each one of e.g.

15   a hundred thousand users has his/her own set.

The invention is not restricted to the examples of its embodiments described above, but many variations are possible within the scope of the inventive idea defined in the claims.

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